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ABSTRACT

The course outline consists of five instructional blocks of several units each: (1) Aircraft Ground Operation and Servicing; (2) Fluid Lines and Fittings; (3) Mechanics Requirements, Privileges and Limitations; (4) Maintenance Publications; and, (5) Maintenance forms and Records. It is a basic course of knowledge and skills necessary to any curriculum leading to a Federal Aviation Agency mechanic's license, requiring a quinmester of 135 clock hours. A posttest and 17 pages of behavioral objectives follow the course outline; instruction sheets used in the course, however, are not included. Audiovisual aids, emphasized in the course, are not listed in the bibliography, but the titles of 22 Federal Aviation Agency publications and other references are listed. (Author/AJ)

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AUTHORIZED COURSE OF INSTRUCTION FOR THE QUINMESTER PROGRAM

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AVIATION MECHANICS I (Power & Frame)
(Aircraft Ground Operation, Servicing, Fluid Lines and Fittings, Mechanics Privileges and Limitations, and Maintenance Publications, Forms and Records)

Department 48 - Course 9073.02

CE001145

DADE COUNTY PUBLIC SCHOOLS

DIVISION OF INSTRUCTION • 1971

ED 092686

D A D E C O U N T Y P U B L I C S C H O O L S

1 4 1 0 N O R T H E A S T S E C O N D A V E N U E

M I A M I, F L O R I D A 33132

Course Outline

AVIATION MECHANICS I (Power & Frame)

(Aircraft Ground Operation, Servicing, Fluid Lines and Fittings, Mechanics Privileges and Limitations, and Maintenance Publications, Forms and Records)

Department 48 - Course 9073.02

the division of

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Dade County Public Schools
Miami, Florida 33132

Published by the Dade County School Board

Course Description

9073	48	9073.02	Aircraft Ground Operation, Servicing, Fluid Lines and Fittings, Mechanics Privileges & Limitations, Maintenance Publications, Forms and Records
State Category Number	County Dept. Number	County Course Number	Course Title

A basic course in the aircraft maintenance technician program, providing a foundation in the proper ground operation and servicing of aircraft, the fabrication of fluid lines and fittings, and Federal Aviation Agency requirements for mechanics, privileges and limitations, maintenance forms and records, and the use of maintenance publications.

Indicator of Success: The student must have

A. Completed the ninth grade
B. Must qualify in the following standardized tests which are usually recorded in the pupil's cumulative guidance record

Name of Test	Minimum Requirements	Probationary Requirements **
1. Mental Ability		
a. Otis Quick-Scoring Mental Ability (Beta)	100 I.Q. or 50% ile	90 I.Q. or 21% ile
b. School and College Ability Test (form 3A, 3B)	50% ile (Total Score)	30% ile (Total Score)
2. Reading Skills		
California Intermediate Reading Test	50% ile (Total Score)	30% ile (Total Score)
3. Arithmetic Skills		
California Intermediate Arithmetic Test	50% ile (Total Score)	30% ile (Total Score)

Indicator of Success (Contd.)

Exceptions to the entrance requirements listed above may only be granted by the agreement of the principal concerned, and the supervisor of Aviation training.

**During the second semester of the first year of enrollment, the achievement record of the individual pupil who was admitted on probation will be reviewed. Pupils making satisfactory progress may continue their training. The probationary period will not be extended beyond the first year of enrollment.

PREFACE

The course outline that follows has been prepared as a guide to help the trainee become proficient in the skills and knowledge necessary to become an Aviation Mechanic. This course outline consist of aircraft ground operation, servicing, fluid lines and fittings, mechanics privileges and limitations, and maintenance publications, forms and records. This is a basic course composed of knowledge and skills necessary should one decide to follow either the Airframe Mechanic, the Powerplant Mechanic or the combined Airframe and Powerplant Mechanic curriculum leading to a Federal Aviation Agency Mechanic's License.

Prospective trainees must meet all entrance requirements as imposed on the inschool youth or the adult vocational programs in Dade County. This course is composed of five blocks of several units each requiring one quinmester of 135 hours.

Great emphasis will be placed on the use of audio visual aids and instruction sheets of various types. A list of behavioral objectives the trainee will be required to perform is included. Following each unit title will be found in parentheses several letters and numbers designating the time spent in terms of theory and shop work. EIT indicates

estimated instructional time, T indicates time spent in theory or classroom work, and L/S indicates time spent in laboratory or shop work.

The level 1 following a unit indicates the student must have knowledge of general principles but no practical application, nor development of manipulative skill. Instruction is given by lecture, demonstration, and discussion.

The level 2 following a unit indicates the student must have knowledge of general principles and limited practical application, and sufficient manipulative skill to perform basic operations. Instruction is given by lecture, demonstration, discussion, and limited practical application.

The level 3 following a unit indicates the student must have knowledge of general principles and performance of a high degree of practical application and sufficient manipulative skill to accomplish return to service. Instruction is given by lecture, demonstration, discussion, and a high degree of practical application.

This outline was developed through the cooperative efforts of the instructional and supervisory personnel, the Quinmester Advisory Committee, and the Vocational Teacher Education Service, and has been approved by the Dade County Vocational Curriculum Committee.

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with Suggested Hourly Breakdown

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GOALS

The aviation maintenance technician must be able to demonstrate:

1. The skills necessary to ground service various types of aircraft.

2. The ability to refer to Federal Aviation Administration publications and interpret their meanings.

3. The skills necessary to manufacture and install various types of fluid lines and fittings used on current aircraft.

4. The ability to assume the responsibility inherent in the aviation maintenance technician's occupation.

Course Outline

AVIATION MECHANICS I (Power & Frame)
(Aircraft Ground Operation, Servicing, Fluid Lines and Fittings, Mechanics Privileges and Limitations, and Maintenance Publications, Forms and Records)

Department 48 - Course 9073.02

I. AIRCRAFT GROUND OPERATION AND SERVICING (45 hours)

A. Fuel Selection and Identification
(Level - 2) (EIT-6 hrs) (T-4 hrs) (L/S-2 hrs)
1. Fuel Identification
   a. Fuel color identification
   b. Matching fuel octane ratings to colors
2. Selection of fuels
   a. Number designation
   b. Type designation
   c. Anti-knock factors
   d. Causes of vapor-lock
   e. Effects of ethylene dibromide added to aviation fuel
   f. Gasoline versus kerosene for turbine engines

B. Start, Ground Operate, Move, Service and Secure Aircraft
(Level - 2) (EIT-39 hrs) (T-12 hrs) (L/S-27 hrs)
1. Fueling Equipment Familiarization
   a. Operation
   b. Method of refueling
   c. Safety precautions
   d. Inspections
   e. Fuel distribution
   f. Protection of fuel system from contamination
2. Start and Operate Aircraft Engines
   a. Selection and use of external power units
   b. Prestarting procedures
   c. Safety precautions
   d. Starting procedures
   e. Operating procedures
   f. Shut-down procedures
   g. Extinguishing induction fires during starting
   h. Start and operate engine with injection carburetor

I. AIRCRAFT GROUND OPERATION AND SERVICING (Contd.)

3. Direct The Movement of Aircraft
   a. Use of proper hand signals to direct aircraft
   b. Towing procedures
   c. Taxi and parking procedures
4. Connect and Operate an External Hydraulic Power Source
   a. Types of hydraulic power units
   b. Fluid compatibility
   c. Connecting power unit to aircraft hydraulic system
   d. Operational checks
   e. System replenishing
5. Prepare an Aircraft For Outside Storage
   a. Equipment necessary for securing aircraft
   b. Procedures for securing aircraft

II. FLUID LINES AND FITTINGS (36 hours)

A. Fabricate and Install Rigid Fluid Lines and Fittings (Level - 3) (EIT-21 hrs) (T-7 hrs) (L/S-14 hrs)
   1. Bend Aluminum and Stainless Steel Tubing
      a. Minimum bend radii
      b. Soft aluminum tubing bent by hand
      c. Hand bending tools
      d. Power bending tools
   2. Form a Bead on Tubing
      a. Tools required
      b. Beading procedure
   3. Fabricate Flares on Tubing
      a. Tube flaring tools
      b. Tubing materials
      c. Flaring procedures
   4. Recognize Defects in Metal Tubing
      a. Defects in tubing
         (1) Deep scratches or dents
         (2) Flattened bends
         (3) Defective flare
      b. Repairing metal tubing
   5. Install a Section of Tubing
      a. Routing of fluid lines
      b. Types of tubing connection
      c. Installation of fluid lines

II. FLUID LINES AND FITTINGS (Contd.)

B. Fabricate and Install Flexible Fluid Lines
(Level - 3) (EIT-15 hrs) (T-5 hrs) (L/S-10 hrs)
1. Fabricate Flexible Hose
a. Tool selection
b. Material selection
c. Storage of hose materials
d. Installation of fittings
2. Install a Flexible Fluid Line
a. Routing of fluid lines
b. Types of flexible fluid line connections
c. Installation of flexible fluid lines

III. MAINTENANCE PUBLICATIONS (27 hours)

A. Locate Reference Data
(Level - 3) (EIT-17 hrs) (T-8.5 hrs) (L/S-8.5 hrs)
1. FAA Specifications and Type Certificate Data Sheets
a. Purpose of
(1) Aircraft type certificate data sheet
(2) Engine type certificate data sheet
(3) Propeller type certificate data sheet
(4) Aircraft specifications
b. Origin of
(1) Type certificate data sheets
(2) Specifications
c. Identification and Numbering System
(1) Specification or type certificate number
(2) Revision number and date
(3) Models eligible
(4) Manufacturer
(5) Serial numbers eligible
d. Information contained
(1) Eligible engines
(2) Eligible propellers
(3) Equipment
(a) Required
(b) Optional

(4) Weight and balance data
(a) Datum location
(b) Maximum gross weight
(c) Center of gravity range
(d) Equipment weight
(e) Equipment location

e. Aircraft and engine listing
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(2) Information contained

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(c) FAR Part 27, Normal category rotorcraft
(d) FAR Part 29, Transport category rotorcraft
(2) Engines and propellers
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(b) FAR Part 35, Propellers

b. Airworthiness standards: maintenance, repair, and operations
(1) Maintenance
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(b) FAR Part 39, Airworthiness directives
(c) FAR Part 43, Maintenance, rebuilding and repair and alteration
(d) FAR Part 45, Identification and registration marking
(e) FAR Part 91, General operating and flight rules
(2) General
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(b) FAR Part 47, Aircraft registration
(c) FAR Part 65, Certification, airmen other than crew members
(d) FAR Part 145, Repair station requirements

III. MAINTENANCE PUBLICATIONS (Contd.)

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   a. Purpose
   b. Origin
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      (2) Manufacturer
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      (2) Large Aircraft, Volume II
      (3) Manufacturer
      (4) Airworthiness directive number
   e. Issuing agency
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      (1) Standardization
      (2) Quality assurance
   b. When required
   c. Relationship to FAR Part 37
   d. Marking of components manufactured under TSO
6. Advisory Circulars
   a. Purpose
   b. Legal status
   c. Numbering system
7. Standard Parts Specifications
   a. Air Force and Navy Standards (AN)
   b. Military Aeronautical Standards (MS)
   c. National Aircraft Standards (NAS)

III. MAINTENANCE PUBLICATIONS (Contd.)

8. Manufacturer's Manuals and Publications
   a. Operators Instructions
   b. Maintenance Manuals
   c. Overhaul Manuals
   d. Parts Catalogs
   e. Service Bulletins and Letters

B. Interpret, and Relate Technical Data
(Level - 3) (EIT-10 hrs) (T-5 hrs) (L/S-5 hrs)

1. Use FAA Specifications and Type Certificate Data Sheets for
   a. Approved equipment
   b. Weight and balance data
   c. Fuel and oil capacity and grade
   d. Control surface travel
   e. Conformity inspection
2. Use of FAA Regulations for
   a. Airworthiness standards
   b. Maintenance and alteration requirements
   c. Registration marking requirements
   d. Inspection requirements
   e. Mechanics certification requirements
   f. Technical standard order requirements
3. Use of Airworthiness Directives for
   a. Continued airworthiness
   b. Inspection requirements
4. Use of Supplementary Type Certificates for
   a. Modification of aircraft
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5. Use of Technical Standard Orders for
   a. Determining minimum performance standards
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   a. Information of general interest to the aviation public
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   c. Standard sizes available
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III. MAINTENANCE PUBLICATIONS (Contd.)

8. Use of Manufacturer's Manuals and Publications for
   a. Operating instructions
   b. Operating limits
   c. Lubrication requirements
   d. Inspection requirements
   e. Maintenance methods and requirements
   f. Overhaul methods and requirements
   g. Inspection procedures
   h. Table of limits
      (1) Manufacturer's tolerances
      (2) Service tolerances
   i. Locating part numbers
      (1) Standard parts
      (2) Oversized parts
      (3) Superseded parts
   j. Changes in service instructions
      (1) By service bulletins
      (2) By service letters

IV. MAINTENANCE FORMS AND RECORDS (18 hours)

A. Method of Writing Description of Aircraft Condition And/Or Work Performed
   (Level - 3) (EIT-3 hrs) (T-1 hr) (L/S-2 hrs)
   1. Description of Repairs Made to Aircraft or Engine
      a. Identification of aircraft forms and records
         (1) Model number
         (2) Manufacturer
         (3) Serial number
         (4) Registration number
         (5) Date
      b. Description requirements
         (1) Legible
         (2) Concise
         (3) Nomenclature and terminology
         (4) References
         (5) Drawings or sketches
         (6) Signature and certificate number
   2. Classification of Maintenance, Repairs or Alterations
      a. Preventative maintenance

IV. MAINTENANCE FORMS AND RECORDS (Contd.)

b. Repairs
   (1) Minor
   (2) Major
c. Alterations
   (1) Minor
   (2) Major

B. Inspection of an Aircraft or Engine and Preparation of a Condition Report
(Level - 3) (EIT-6 hrs) (T-1.5 hrs) (L/S-4.5 hrs)
1. Inspection of an Aircraft or Engine to Determine Compliance with
   a. Manufacturer's service information
   b. Airworthiness directive
2. Writing of Aircraft Condition Report to Indicate
   a. Compliance with standard
   b. Non-compliance with standard

C. Completion of Required Maintenance Forms and Records
(Level - 3) (EIT-9 hrs) (T-3 hrs) (L/S-6 hrs)
1. Requirements for Records
   a. Maintenance, rebuilding and alteration records
      (1) Content
      (2) Form
      (3) Disposition
   b. Annual, 100 hour, and progressive inspection records
      (1) Content
      (2) Form
      (3) Disposition
2. Completion of Forms and Records
   a. Logbook entry for
      (1) Preventative maintenance
      (2) Minor repair or alteration
      (3) Major repair or alteration
      (4) Compliance with Airworthiness Directive
      (5) Component time in service
   b. FAA Form 337 for
      (1) Major Repair
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   c. FAA Form 8330-2, malfunction of defect report

IV. MAINTENANCE FORMS AND RECORDS (Contd.)

3. Evaluation of Aircraft Records for Compliance with Federal Aviation Regulations
   a. Aircraft registration certificate
   b. Airworthiness certificate
   c. Airframe logbook
   d. Engine logbook
   e. Repair and alteration records (FAA Form 337)
   f. Weight and balance data
   g. Equipment list
   h. FCC radio station license

V. MECHANICS REQUIREMENTS, PRIVILEGES, AND LIMITATIONS (9 hours)

A. Mechanics Requirements (FAR Part 65, Subpart D)
   (Level - 3) (EIT-3 hrs) (T-2 hrs) (L/S-1 hr)
   1. General Eligibility Requirements
      a. Age
      b. Language
      c. Knowledge
         (1) Aviation maintenance technician school graduate
         (2) Practical experience performing duties of mechanic
   2. Skill Requirements
      a. Written test
         (1) General
         (2) Applicable rating
      b. Oral and practical
      c. Time limit on completion

B. Inspection Authorization Requirements (FAR Part 65, Subpart D)
   (Level - 3) (EIT-1.5 hr) (T-1 hr) (L/S-0.5 hr)
   1. Requirements for Issuance
      a. Ratings
      b. Time held
      c. Recency of experience
      d. Fixed base of operations
      e. Equipment, facilities, and inspection data
      f. Written examination
      g. Expiration date

V. MECHANICS REQUIREMENTS, PRIVILEGES, AND LIMITATIONS (Contd.)

2. Requirements for Renewal
   a. Annual inspections
   b. Major repairs or alterations
   c. Progressive inspection

C. Mechanics Privileges and Limitations
(Level - 3) (EIT-3 hrs) (T-2 hrs) (L/S-1 hr)

1. Privileges
   a. Perform and supervise
      (1) Maintenance
      (2) Alteration
   b. Approve and return to service after
      (1) Maintenance
      (2) Alteration
      (3) Repair
      (4) 100 hour inspection

2. Limitations
   a. Major repairs or alterations to
      (1) Propellers
      (2) Instruments
   b. Return to service after
      (1) Major repair
      (2) Major alteration
      (3) Annual inspection
   c. Recency of experience requirement
   d. Knowledge of current instructions
   e. Display of certificate

D. Inspection Authorization Privileges and Limitations
(Level - 3) (EIT-1.5 hrs) (T-1 hr) (L/S-0.5 hr)

1. Privileges
   a. Approval of major repairs and alterations
   b. Annual inspections
   c. Progressive inspections

2. Limitations
   a. Approval of technical data
   b. Aircraft under FAR Parts 121 and 127
   c. Nondisplay of inspection authorization
   d. Change in fixed base of operation

VI. QUINMESTER POST TEST

BEHAVIORAL OBJECTIVES

BLOCK I - AIRCRAFT GROUND OPERATION AND SERVICING

A. Fuel Selection and Identification

1. Fuel Identification

Given:

Aircraft operator's manual, a list of colors and octane rating ranges and a fuel system of an airplane.

Performance:

The student will obtain fuel samples from the fuel system of an airplane and verify that the fuel at least equals the minimum required octane rating. He will associate each color with the correct octane range, and describe how volatility is related to vapor lock, and will discuss the advantages and limitations of kerosene as a turbine fuel.

Standard:

Matching of color to octane rating will be 100 per cent correct.

2. Selection of Fuels

Given:

Aircraft Operator's Manual, Specific Aircraft.

Performance:

The student will select the correct grade of fuel utilizing the operator's manual and information stenciled on fuel filler openings. He will also make a determination as fuel to be serviced, if, the required octane rated fuel is not available.

Standard:

Selection of correct octane rated fuel for each aircraft must be 100 per cent correct.

B. Start, Ground Operate, Move, Service and Secure Aircraft

1. Fueling Equipment Familiarization

Given:

Fueling equipment, airplane fuel tanks nearly empty, a specified fuel load, and an airplane fueling procedures manual with fuel charts.

Performance:

The student will perform fueling of the airplane to bring the total fuel in the tanks up to the specified load, with distribution between tanks as specified in the fuel manual.

Standard:

Total fuel load and amount in each tank will be within 10% of the amounts specified in the fuel charts and fueling will be accomplished in accordance with specified procedures without error.

2. Start and Operate Aircraft Engines

Given:

Aircraft engines equipped with float type carburetors, pressure injection carburetors, and internal superchargers. Written engine operating procedures for each given type of engine, and auxiliary power requirements, and operating specifications.

Performance:

The student will perform two starts with each type of engine, operate each type through its normal operating range and perform complete shut down for each type. He will select, connect, and operate an adequate external auxiliary electrical power source.

Standard:

All starts, operation, and shut-downs comply with given procedures without error and auxiliary power will be selected, connected and operated as specified.

3. Direct the Movement of Aircraft

Given:

Hand signal charts or instructions, live or simulated aircraft movements.

Performance:

The student will use accepted hand signals in providing directions to the movement of aircraft during towing, taxiing, and parking.

Standard:

Signals must be sharp, clear and in conformance to instructions. Response to changing conditions must be instantaneous.

4. Connect and Operate an External Hydraulic Power Source

Given:

An aircraft or hydraulic system mock-up with normal hydraulic operating pressure specified, an external hydraulic power source, and written operating instructions.

Performance:

The student will connect the external hydraulic power source to the aircraft or mock-up and operate the external source to obtain specified hydraulic pressure in the aircraft or mock-up hydraulic system.

Standard:

Connections and operation will conform to the written instructions and specified pressure will be maintained in the aircraft or mock-up during system operation from the external power source.

5. Prepare an Aircraft for Outside Storage

Given:

Aircraft for outside storage, written storage procedures, and necessary securing equipment.

Performance:

The student will prepare an aircraft for outside storage. He will analyze requirements and secure the aircraft for normal weather conditions at that location.

Standard:

Aircraft will be tied down and secured to prevent damage under normal weather conditions.

BLOCK II - FLUID LINES AND FITTINGS

A. Fabricate and Install Rigid Fluid Lines and Fittings

1. Bend Aluminum and Stainless Steel Tubing

Given:

Written information, samples of aluminum and stainless steel tubing of various diameters, tube bending tools and equipment.

Performance:

The student will make three bends in soft aluminum tubing using hand bending methods. He will make 3 bends each in aluminum alloy and stainless steel tubing using hand or production bending tools.

Standard:

All bends will meet return-to-service standards for circular shape and smooth appearance and will conform to minimum bend radii rules.

2. Form a Bead on Tubing

Given:

Aluminum tubing, beading tools and reference information pertaining to the beading of tubing.

Performance:

The student will form a bead at the tubing ends of two different diameters of aluminum tubing.

Standard:

The beads formed on the tubing will comply with MIL specifications and comply with the dimensions and quality of workmanship established by these specifications.

3. Fabricate Flares on Tubing

Given:

Aluminum tubing, flaring tools and reference information pertaining to the flaring of tubing.

Performance:

The student will form a single flare at one end of the tubing and a double flare at the other end.

Standard:

The flares will meet MIL specifications and be free of the defects identified in AC 43.13-1.

4. Recognize Defects in Metal Tubing

Given:

Random samples of metal tubing that may display defects that would cause the tubing to be rejected.

Performance:

The student will select one sample of tubing that would be rejected due to each of the following defects:

a. Deep scratches or dents
b. Flattened tube bends
c. Defective flare

Standard:

The identification of samples containing defects will be without error.

5. Install a Section of Tubing

Given:

Sections of replacement tubing and various fluid carrying systems installed in an airplane or mock-up and an appropriate manual.

Performance:

The student will install a replacement section of tubing as a procedure to repair the fluid systems. He will determine the proper routing and support of the tubing section by reference to the manuals, install the replacement tubing with AN, MS and hose clamp type fittings and make an operational check of the systems.

Standard:

The installation will be of such quality that the system functions normally and there is no leak in the replacement section of the system.

B. Fabricate and Install Flexible Fluid Lines

1. Fabricate Flexible Hose

Given:

Field replaceable fittings, flexible hose, installation tools and appropriate reference information.

Performance:

The student will identify and select the correct hose, materials and fittings from stock, make-up and test a flexible hose assembly.

Standard:

The hose assembly will be of such quality that it will function without leakage under the required test pressure.

2. Install a Flexible Fluid Line

Given:

Sections of replacement flexible hose, various fluid carrying systems installed in an aircraft or mock-up and appropriate reference material.

Performance:

The student will install a replacement section of flexible hose as a procedure to repair the fluid system. He will determine the proper routing and support of the hose section by reference to appropriate manuals, install the replacement hose section using AN or MS type support clamps and make an operational check of the system.

Standard:

The installation will be of such quality that the system functions normally and there is no leak in the replacement section of the system.

BLOCK III - MAINTENANCE PUBLICATIONS

A. Locate Reference Data

1. FAA Specifications and Type Certificate Data Sheets

Given:

An index and sample random copies of the FAA Aircraft and Engine Specifications and Type Certificate Data Sheets.

Performance:

When provided with the manufacturer's name, model number and serial number, the student will locate the Specification or Type Certificate Data Sheet for five aircraft or engines.

Standard:

The student will locate the specification or Type Certificate Data Sheets without error.

2. Federal Aviation Regulations

Given:

A file of Federal Aviation Regulations including Parts: 1, 23, 27, 29, 33, 35, 37, 39, 43, 45, 47, 65, 91, and 145.

Performance:

When provided with ten items regarding aircraft maintenance that are governed by the Federal Aviation Regulations, the student will locate the parts of the FARS that are applicable to each item.

Standard:

The student will locate the applicable parts of Federal Aviation Regulations without error.

3. Airworthiness Directives

Given:

An index and random sample copies of the FAA airworthiness directives for aircraft, engines, propellers and equipment.

Performance:

When provided with the manufacturer's name, model number, and serial number, the student will locate the applicable airworthiness directives for two aircraft, one engine, one propeller and one item of equipment.

Standard:

The student will locate the applicable airworthiness directives without error.

4. Supplementary Type Certificates

Given:

A reference summary file of Supplementary Type Certificates (STC) and a list of five Supplementary Type Certificate numbers.

Performance:

The student will locate the name and address of the holder of each of the five Supplementary Type C Certificates.

Standard:

The student will locate the correct name and address of the holder of each Supplementary Type Certificate without error.

5. Technical Standard Orders

Given:

An index and random sample copies of the Technical Standard Orders (TSO) and five random sample parts that are manufactured under a TSO.

Performance:

The student will locate the correct Technical Standard Order (TSO) under which each part was manufactured.

Standard:

The student will locate the correct Technical Standard Order (TSO) without error.

6. Advisory Circulars

Given:

A random file of Advisory Circulars and five topics regarding aircraft maintenance that are expanded through Advisory Circulars.

Performance:

The student will locate the Advisory Circular that is applicable to each of the five topics.

Standard:

The student will locate the correct Advisory Circulars without error.

7. Standard Parts Specifications

Given:

A random sample file of standard parts specifications including AN, MS, and NAS specifications.

Performance:

When provided with five aircraft parts manufactured under Standard Parts Specifications and the standard number under which they were manufactured, the student will locate the standard which is applicable to each part.

Standard:

The student will locate the correct standard specification for each part without error.

8. Manufacturer's Manuals and Publications

Given:

A sample file of manufacturer's service bulletins or letters, an operator's handbook, a maintenance manual, a parts catalog, and an overhaul manual.

Performance:

When provided with a written list of ten items regarding aircraft maintenance or operation, of which two will be from the operator's handbook, two from the overhaul manual, two from the maintenance manual, two from the

parts catalog, and two from the manufacturer's service bulletins or letters, the student will locate the correct publication and section that is applicable to each item.

Standard:

The student will locate the correct publication and section for each item without error.

B. Read, Interpret, and Relate Technical Data

1. Use FAA Specifications and Type Certificate Data Sheets

Given:

An index and sample copies of the FAA Aircraft and Engine Specifications and Type Certificate Data Sheets.

Performance:

When provided with the manufacturer's name, model number, serial number and written descriptions of five maintenance problems requiring the use of the aircraft specifications and type certificate data sheets, the student will locate and interpret the applicable technical data for each problem.

Standard:

The student will locate the applicable technical data within a reasonable time limit. Interpretation of data will be without error.

2. Use FAA Regulations

Given:

A file of Federal Aviation Regulations including Parts: 1, 23, 25, 27, 29, 33, 35, 37, 39, 43, 45, 47, 65, 91, and 145.

Performance:

When provided with five items regarding aircraft maintenance that are governed by the Federal Aviation Regulations, the student will locate and interpret the applicable technical data for each item.

Standard:

The student will locate and interpret the applicable data within reasonable time limits. Interpretation of data will be without error.

3. Use of Airworthiness Directives

Given:

An index and random sample copies of the FAA Airworthiness Directives for aircraft, engines, equipment and propellers.

Performance:

When provided with the manufacturer's name, model number, and serial number, the student will locate and interpret the applicable Airworthiness Directives for two aircraft, one engine, one propeller and one item of equipment.

Standard:

The student will locate and interpret the applicable Airworthiness Directives within reasonable time limits. Interpretation of Airworthiness Directives will be without error.

4. Use of Supplementary Type Certificates

Given:

A sample copy of a Supplementary Type Certificate and a five question exam based on the Supplementary Type Certificate.

Performance:

The student will locate and interpret the applicable technical data contained in the Supplementary Type Certificate and complete the five question exam based on the data provided in the Supplementary Type Certificate.

Standard:

The student will locate and interpret the applicable technical data and answer the five questions correctly.

5. Use of Technical Standard Orders

Given:

An index and random sample copies of the Technical Standard Orders (TSO) and five random sample parts that were manufactured under a TSO.

Performance:

The student will locate the applicable TSO and interpret the information to determine whether the sample components comply.

Standard:

The student will correctly interpret those provisions of the TSO pertaining to identification of the five sample components.

6. Use of Advisory Circulars

Given:

A random file of Advisory Circulars and five topics regarding aircraft maintenance that are expanded through Advisory Circulars.

Performance:

The student will locate and interpret the data contained in the Advisory Circulars for each of the five topics assigned.

Standard:

The student will locate and interpret the applicable technical data within a reasonable time limit. Interpretation of data will be without error.

7. Use of Standard Parts Specifications

Given:

A random sample file of standard parts specifications including AN, MS, and NAS specifications.

Performance:

When provided with five parts that were manufactured under standard parts specifications and the standard number under which they were manufactured, the student will locate the standard which is applicable to each part and markings, materials and sizes available.

Standard:

The student will locate and interpret the applicable data within a reasonable time limit. Interpretation of data will be without error.

8. Use of Manufacturer's Manual and Publications

Given:

A sample file of manufacturer's service bulletins or letters, an operator's handbook, a maintenance manual, a parts catalog, and an overhaul manual.

Performance:

When provided with a written list of ten items regarding aircraft maintenance, the student will locate and interpret the applicable technical data for each of the ten items.

Standard:

The student will locate and interpret the applicable technical data within a reasonable time limit. Interpretation will be without error.

BLOCK IV - MAINTENANCE FORMS AND RECORDS

A. Method of Writing Description of Aircraft Condition and/or Work Performed

1. Description of Repairs Made to Aircraft or Engine

Given:

Sample copies of aircraft forms, records, a written description of work performed on a specified aircraft, and the manufacturer's service manual.

Performance:

The student will identify and write descriptions of work performed on specified aircraft.

Standard:

The written descriptions will be properly identified, legible, concise and use appropriate terminology and nomenclature. All entries will conform to minimum requirements of the Federal Aviation Regulations.

2. Classification of Maintenance, Repairs or Alterations

Given:

The manufacturer's service manual, a copy of FAR Part 43, Appendix A, and a written description of a preventative maintenance task, a minor repair and alteration, and a major repair and alteration that had been performed on a specified aircraft.

Performance:

The student will classify the assigned task that had been performed on a specified aircraft.

Standard:

The student will correctly classify the assigned task in accordance with FAR Part 43, Appendix A, without error.

B. Inspection of an Aircraft or Engine and Preparation of a Condition Report

1. Inspection of an Aircraft or Engine to Determine Compliance

Given:

An aircraft or engine, the manufacturer's service manual and a copy of a manufacturer's service bulletin (or letter) and an Airworthiness Directive applicable to the given aircraft or engine.

Performance:

The student will conduct an inspection of the given aircraft or engine that will reveal the status of that particular service bulletin (or letter) and Airworthiness Directive given.

Standard:

The student will determine the applicability of the assigned service bulletin (or letter) and Airworthiness Directive and determine the status of the assigned aircraft or engine with regard to the service problem.

2. Writing of an Aircraft Condition Report

Given:

The results of the previous inspection and a typical aircraft or engine condition report form.

Performance:

The student will prepare a condition report to indicate the results of the inspection.

Standard:

The report will be properly identified, clear, concise and sufficiently detailed so that it reflects the status and condition of the aircraft or engine at the time of the inspection.

C. Completion of Required Maintenance Forms and Records

1. Requirements for Records

Given:

Descriptions of ten circumstances or conditions relating to the content, form and disposition of maintenance, rebuilding, alteration and inspection records.

Performance:

The student will judge each circumstances or condition and indicate his decision.

Standard:

In a multiple choice test, the student will judge ten hypothetical circumstances or conditions and react in a manner that is in accordance with the Federal Aviation Regulations. He will correctly judge seven of the ten circumstances or conditions.

2. Completion of Forms and Records

Given:

FAR Parts 91 and 43, Advisory Circular 43.13-1 & 2, a manufacturer's service manual, a logbook, FAA forms 337 and 8330, written descriptions of five typical maintenance tasks and a written description of one malfunction or defect.

Performance:

Using the appropriate references, the student will, from the written descriptions, complete one logbook entry for preventative maintenance, a minor repair or alteration, a major repair or alteration, compliance with an Airworthiness Directive, and component time in service. The student will also complete an FAA form 337 for a major repair, a major alteration and an FAA form 8330 for a malfunction or defect.

Standard:

All eight entries will be neat, legible, concise, correct, and comply with the requirements of FAR Parts 91 & 43 and Advisory Circular 43.9.

3. Evaluation of Aircraft Records for Compliance with Federal Aviation Regulations

Given:

A complete record file for an aircraft, including Registration and Airworthiness Certificates, Operations Limitations Manual, and/or Placards, Radio Station License,

Weight and Balance Report, Equipment List, Airframe and Powerplant Logbooks, prior repair and alteration records, and the applicable parts of the Federal Aviation Regulations.

Performance:
The student will examine the file and judge whether it complies with the Federal Aviation Regulations.

Standard:
The student will correctly interpret and apply the regulations and judge the records without error or omission.

BLOCK V - MECHANICS REQUIREMENTS, PRIVILEGES, AND LIMITATIONS

A. Mechanics Requirements

1. General Eligibility Requirements

Given:
Federal Aviation Regulation Part 65.

Performance:
The student will read and interpret the regulations governing the general eligibility requirements for the issuance of a mechanics certificate. He will answer a five question multiple choice examination based on FAR Part 65.

Standard:
The student will answer four questions correctly.

2. Skill Requirements

Given:
Federal Aviation Regulation Part 65.

Performance:
The student will read and interpret the regulations governing the skill requirements for the issuance of a mechanics certificate. He will answer a five question multiple choice examination based on FAR Part 65.

Standard:
The student will answer four questions correctly.

B. Inspection Authorization Requirements

1. Requirements for Issuance

Given:

Federal Aviation Regulation Part 65.

Performance:

The student will read and interpret the regulations governing the requirements for the issuance of an Inspection Authorization Certificate. He will answer a five question multiple choice examination based on FAR Part 65.

Standard:

The student will answer four questions correctly.

2. Requirements for Renewal

Given:

Federal Aviation Regulation Part 65.

Performance:

The student will read and interpret the regulations governing the requirements for renewal of the Inspection Authorization Certificate. He will answer a five question multiple choice examination based on FAR Part 65.

Standard:

He will answer all four questions correctly.

C. Mechanics Privileges and Limitations

1. Privileges

Given:

Federal Aviation Regulation Part 65.

Performance:

The student will read and interpret the regulations governing the privileges of a mechanic. He will answer a five question multiple choice examination based on FAR Part 65.

Standard:

The student will answer four questions correctly.

2. Limitations

Given:

Federal Aviation Regulation Part 65.

Performance:

The student will read and interpret the regulations governing the limitations of a mechanic. He will answer a five question multiple choice examination based on FAR Part 65.

Standard:

The student will answer four questions correctly.

D. Inspection Authorization Privileges and Limitations

1. Privileges

Given:

Federal Aviation Regulation Part 65.

Performance:

The student will read and interpret the regulations governing the privileges of an inspection authorization. He will answer a five question examination, multiple choice, based on FAR Part 65.

Standard:

The student will answer four questions correctly.

2. Limitations

Given:

Federal Aviation Regulations Part 65.

Performance:

The student will read and interpret the regulations governing the limitations of an inspection authorization. He will answer a five question multiple choice examination based on FAR Part 65.

Standard:

The student will answer four questions correctly.

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A P P E N D I X

Quinmester Post Test Sample

Quinmester Post Test

Name_____ Date_____ Score_____

Multiple Choice Test Items

Each question is followed by four possible answers, select the best answer and mark your answer sheet accordingly.

1. What is the purpose of the linear stripe on a flexible fluid line?
    1. It indicates the type of fluid line
    2. It indicates that you cannot bend it more than 30 degrees
    3. To indicate slack in the line
    4. To indicate twist in the line after installation

2. Which of the following statements concerning Military Standard flareless fittings is correct?
    1. During installation, MS flareless fittings are normally tightened by turning the nut to a specified amount after the sleeve and fitting sealing surface have made contact rather than being torqued
    2. MS flareless fitting sleeves must not be preset on the line prior to assembly
    3. MS flareless fittings should not be lubricated prior to assembly
    4. All of the above statements are true

3. What type of flare is used on a soft aluminum hydraulic line of 3/8 inch outer diameter or smaller?
    1. 37 degree single flare
    2. 45 degree single flare
    3. 37 degree double flare
    4. 45 degree double flare

4. Which of the following is <u>not</u> a required entry in the aircraft log book after a minor repair?
    1. Date repair was made
    2. Place where the repair was made
    3. Name and license number of the mechanic
    4. Details of the repair and corrective action

5. To find placarding of a certain type aircraft you should look in
    1. AC 43.13-1
    2. the FAA Aircraft Specifications
    3. the aircraft equipment list
    4. the aircraft logbook

6. The true statement concerning the installation of hydraulic tubing is
    1. the tubing should be drawn to the fitting by tightening the nut
    2. all nuts should be extremely tight to insure a leak free union
    3. the tubing should be pushed snugly against the fitting before tightening the nut
    4. never use lubricant on any type hydraulic fitting

7. When defueling an aircraft you should
    1. defuel in an airconditioned hanger
    2. defuel with radios on so you can call immediately in case of fire
    3. defuel in a hanger to prevent dissipation of fumes
    4. defuel outside in open air

8. What is the primary purpose of a single point fueling system?
    1. To reduce fueling time
    2. To reduce the number of personnel required for fueling
    3. To eliminate the evaporation of fuel
    4. None of the above.

9. An aircraft has had an annual inspection and is then test flown. The results of the test must be entered by
    1. the pilot on FAA form 337
    2. the mechanic on FAA form 337
    3. the pilot in the aircraft records
    4. the mechanic in the aircraft records

10. You are <u>not</u> required to show your mechanic's license to a
    1. state policeman
    2. local policeman
    3. FAA official
    4. pilot

11. A mechanic may readily determine which type of hydraulic fluid should be used in a hydraulic system by
    1. having a laboratory test made of the system hydraulic fluid
    2. checking the markings on or near the reservoir filler opening
    3. mixing two types of hydraulic fluid
    4. a tridometer

12. Who is responsible for the proper material being used in the repair of an aircraft?
    1. The owner of the aircraft
    2. The installing person or agency
    3. The manufacturer of the material
    4. The supplier of the material

13. When installing hydraulic tubing, you should
    1. clean and tighten it without lubricant
    2. always use vasoline as a lubricant and tighten it
    3. use hydraulic fluid as a lubricant and tighten it
    4. use a lubricant on aluminum tubing only

14. FAA Airworthiness Directives are issued
    1. to correct an unsafe condition
    2. for ease of maintenance
    3. to keep the public notified of current FAA safety standards
    4. to set current maintenance standards

15. Where would you find the knowledge, skill and experience requirements for certification as an Airframe and Powerplant mechanic?
    1. FAR 141
    2. FAR 145
    3. FAR 65
    4. AC 43.13

16. After a wing has had a major repair it must be inspected and returned to service by
    1. a person who is the holder of an inspection authorization
    2. any person employed at an authorized repair station
    3. a certified airframe mechanic
    4. a certified powerplant mechanic

17. Who can perform an annual inspection and return the aircraft to service?
    1. A mechanic with an Airframe rating
    2. A mechanic with a Powerplant rating
    3. A mechanic with an A and P rating
    4. A mechanic with an Inspection Authorization

18. What source of information now replaces the old type specifications?
    1. Type Certificate Data Sheets
    2. Aircraft Operating Manual
    3. FAA Air Directives
    4. Aircraft Inspection and Repair (AC 43.13)

19. How would you seal off a disconnected hydraulic fitting?
    1. Tape the end
    2. Plug it with a rag
    3. Remove hoses by disconnecting the other end
    4. Use a cap or plug

20. Aviation gasoline with an octane rating of 80 is dyed what color?
    1. Green
    2. Purple
    3. Red
    4. Blue

21. A certified mechanic must notify the FAA of a change in his address within
    1. 90 days
    2. 30 days
    3. 7 days
    4. 120 days

22. Who is responsible for correcting discrepancies which arise between inspections?
    1. An authorized inspector
    2. An A & P mechanic
    3. The owner or operator
    4. The manufacturer

23. An aircraft engine equipped with a pressure injection carburetor should be started with the mixture control in what position?
    1. Idle cut-off
    2. Full rich
    3. Auto lean
    4. Auto rich

24. When starting an aircraft engine, the ignition should be turned on
    1. before engaging the starter
    2. after the engine has turned at least two full revolutions
    3. after the propeller has turned two full revolutions
    4. after the engine has started on ignition boost

25. An aircraft engine should be warmed up at approximately
    1. 650 RPM
    2. 1,000 RPM
    3. 1,500 RPM
    4. 300 RPM

KEY TO QUINMESTER POST TEST
9073.02

1.	4	9.	3	17.	4
2.	4	10.	4	18.	1
3.	3	11.	2	19.	4
4.	2	12.	2	20.	3
5.	2	13.	1	21.	2
6.	3	14.	1	22.	3
7.	4	15.	3	23.	1
8.	4	16.	1	24.	2
				25.	2